

FutureHorizons
The Global Semiconductor Industry Analysts



Future Horizons Newsletter

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Industry News By Company

[Ditched by Apple, Imagination is now for sale](#)

Imagination Technologies Group has announced that the entire company is on the market. The company has been through a lot. It lost its top customer, Apple Inc., which led to Imagination selling its SoC design group and putting its MIPS processor core licensing business up for sale.

The U.K.-based company said that after receiving interest from multiple parties, its board of directors has initiated a formal sale process for the entire company and is engaged in preliminary discussions with potential bidders.

Imagination also noted that it remains in a dispute with Apple, a key GPU core licensee for years. Apple notified the company in April that it will no longer use Imagination's intellectual property in new products. In May, Imagination said that it was engaged in a "dispute resolution procedure" with Apple and that negotiations had stalled.

[Apple Moves To Poach Staff From Imagination Technologies As Opens New Office Only 8 Miles Away From Rival](#)

Apple has launched an attack on iPhone chip maker Imagination Technologies by opening a new office close to its headquarters.

The move is the latest twist in the saga involving the two firms, which have been locked in a bitter war of words after Apple told Imagination it would no longer use its graphics chip technology in iPhones and iPads.

The Silicon Valley giant is reportedly renting a 22,500 square foot office in the centre of St Albans to work on creating its own graphic chips – three months after announcing plans to wind down its relationship with the British tech firm.

Moving in: Apple has launched an attack on Imagination Technologies by opening a new office close to its headquarters

The new base is just 8 miles down the road of Imagination's headquarters in Kings Langley and has sparked fears the tech firm is looking to poach more staff.

Apple has already hired a string of Imagination employees – including its former chief operating officer John Metcalfe and currently advertises more than a dozen job postings for experts in graphics hardware in the region.

[7nm Semiconductor Tech to Arrive in 3 Stages: GlobalFoundries](#)

As the pace of Moore's Law advances have slowed, and the benefits of each new node have gotten steadily smaller, we've seen the various foundries adopt different ways of dealing with the problem. Intel has pursued traditional scaling, but is spending longer at each node. But companies like Samsung, GlobalFoundries, and TSMC have defined a system of short and long-lived nodes, with different characteristics and their own individual roadmaps for how long each node will last.

Unlike TSMC and Samsung, both of which have 10nm products on their roadmaps, GlobalFoundries opted to leap straight for 7nm after licensing 14nm production from Samsung. It was an ambitious move for the foundry, which had problems with its initial roadmap after spinning itself off from AMD and eventually had to drop its own 14nm XM process plans in favor of a Samsung licensing deal. With 7nm, GlobalFoundries is planning to develop its own process technology and rollout schedule. We've previously talked about the company's plans for a 2H 2018 high volume manufacturing start, but Anandtech has additional details on how the 7nm rollout will be handled.

Nokia Touts NPU for Internet's Next Chapter

SAN FRANCISCO—Claiming capabilities that will enable the next phase of Internet evolution, Nokia on Wednesday (June 14) unveiled its next-generation service routers, based on a network processor capable of an eye-popping 2.4 Tb/s performance.

The chip, the Nokia FP4, is implemented in a 16nm FinFET process—two full nodes ahead of its predecessor, the 40nm FP3. Nokia bills the FP4 as "the world's first multi-terabit chipset" and claims it is up to six times more powerful than any processor currently available despite relatively low power consumption.

Speaking at a launch event here Wednesday, Basil Alwan president of the IP/Optical Networks business unit at Nokia, offered an ambitious blueprint for the FP4's potential impact on the continuing evolution of the Internet, and the onset of what he termed "cloud-scale routing." He said the chipset offers the performance and heightened security to enable further transformations of the Internet and the Cloud, including immersive communications, the Internet of Things (IoT) and the growth of applications that leverage artificial intelligence.

TI Claims To Obsolete FPGAs For Embedded Apps

LAKE WALES, Fla. — Texas Instruments claims to have made the field-programmable gate array obsolete for embedded industrial applications such as servo-motor control. As the world's largest industrial-semiconductor manufacturer, TI may be uniquely positioned to make that judgment, but that doesn't necessarily mean FPGAs are going away.

The short of it is that using TI's C2000 industrial microcontroller with its DesignDRIVE fast-current-loop software provides a 460-nanosecond current loop that can eliminate the need for FPGAs in many embedded industrial control applications. The long of it is that FPGAs still have life in other applications, and TI's approach is not the only one that offers efficiencies over the combined use of a microcontroller and FPGA, according to Tom Hackenberg, principal analyst of embedded processors at IHS Markit.

Industry News & Trends

[Germanium Displacing GaAs for RF Transistors](#)

LAKE WALES, Fla.—Germanium is beginning to replace gallium arsenide (GaAs) for fast radio frequency transistors that are less expensive and also compatible with silicon and CMOS. At the 2017 Symposia on VLSI Technology and Circuits in Japan earlier this month, European research institute Imec presented a pair of papers showing gate-all-around (GAA) transistors that outperform standard CMOS below the 10-nanometer node plus have source/drain contacts with billionth-of-an-ohm resistance.

The super fast sub-10-nanometer SiGe GAA transistors used strained germanium p-channels on 300 millimeter wafers to demonstrate their superior electrostatic control, achieved by using high-pressure annealing (HPA), which was also demonstrated by Imec as useful for more traditional FinFET architectures.

[Telit, Tele2 Develop Embedded SIM](#)

Telit and Tele2 have worked on a cellular module-embedded technology that claims to replacement or complement the traditional SIM card and tray used in cellular-connected devices.

Both companies believe that the module-software embedded SIM technology is essential to the mass-rollout of cellular IoT, in particular LPWA offerings such as LTE-M and NB-IoT. They noted that manufacturers of connected products that choose to embed Telit IoT modules with the simWISE technology can expect reduced manufacturing costs and improved customer experience across all verticals and markets.

[Imec Eyes New Metals for Interconnect](#)

SAN FRANCISCO—On the eve of the annual Semicon West tradeshow here, the Imec research institute described work with new materials, process modules and architectures aimed at alleviating high-density interconnect challenges that loom just down the road for semiconductor manufacturing.

At Imec's annual U.S. technology forum here Monday (July 10), Zsolt Tokei, a distinguished member of Imec's technical staff focused on interconnects, explained how chip interconnects are being squeezed ever tighter with continued scaling. As chip dimensions shrink, so too does the cross-sectional area of the copper wires within, increasing the resistance-capacitance of the interconnect and signal delay.

Tokei said the emergence of RC delay issues started several technology nodes back and have become increasingly challenging at each node since. He said Imec and partners including Intel, Samsung and TSMC have shown options for high density interconnect at future nodes.

East European News & Trends

Russia Launches New Funds For Start-Ups With Global Ambitions

The Skolkovo Foundation earlier this month announced the launch of Skolkovo Ventures, a group of three new investment funds to focus on IT, industrial technology, and biotech, East-West Digital News reported, citing Vasily Belov, the CEO of Skolkovo Ventures.

The funds, which have been set up in partnership with the state-backed fund of funds RVC, will operate out of an office in the Skolkovo Technopark on the outskirts of Moscow. Mr. Belov formerly served as the Foundation's senior vice president for innovations.

He said in an explanation of the reasons for setting up a commercial venture fund that "as a state institution that supports a large number of start-ups, we see a deficit of money, and in particular, money that would allow companies to grow and enter foreign markets."

New Wax-Based 3D Printing Technology Developed In Siberia

Krasnoyarsk scientists have developed a new method of using wax in 3D printing. Products for metallurgy can now be made from ordinary candle grade paraffin, the local Reshetnev Siberian State Aerospace University (SibSAU) announced.

"Unlike classical technology that requires fairly costly materials such as silicone or ceramics, this technology enables the use of cheap expendables, for example, hard-melting wax used in foundries. We could even use ordinary paraffin to make candles with," the university explained.

The Krasnoyarsk project is expected to cut the cost of casting processes while improving its quality. The technology is said to enable the manufacture of a casting pattern with an accuracy of 0.05mm, taking just a few hours to complete the process, not months as taken in conventional techniques.

Siberians Create Semiconductors 5,000 Times Thinner Than Hair

Scientists at the Tomsk State University (TSU) in Siberia have pioneered the growing of semiconductors from organic molecules in the gas phase in Russia. Their super-thin films are reported to be 5,000 thinner than a human hair, TSU announced on its English-language website.

The self-assembly of molecules is said to have led to the emergence of semiconductor structures that provide increased speed of devices with minimal energy costs, thus paving the way for the development of a new family of molecular nanoelectronics.

"The main technical problem of producing devices based on organic semiconductors created by traditional methods of sputtering is that they have low conductivity, because individual molecules interact poorly with each other. Overcoming this barrier is possible with the help of molecular epitaxy, a method of layer-by-layer application which provides chemical binding of molecules and thereby increases charge transport," said Tatyana Kopylova of TSU's Laboratory of Organic Electronics.

ReRAM Goes 3D

LAKE WALES, Fla. — Resistive random-access memories (ReRAMs) are a new breed of “universal” memory that could replace all other types, offering the speed of RAM but with the density and non-volatility of flash. To date, however, flash has managed to stay ahead of ReRAM by going 3D. Now the Moscow Institute of Physics and Technology (MIPT) says it has reengineered its ReRAM process to achieve a thin-film technique that is amenable to 3D stacking.

All ReRAMs work using memristors, in which migrating oxygen vacancies in the dielectric layer change the dielectric’s resistance to represent ones and zeros. In addition to MIPT, researchers from 4DS Memory Ltd., Crossbar Inc., HP Inc., Knowm Inc., and Rice University have created prototypes.

For 3D ReRAMs, “we needed not only to form oxygen vacancies in the dielectric layer, but also to detect them,” MIPT scientist Konstantin Egorov told EE Times. To do so, MIPT specialists used a method for observing the electron states in the bandgap of the dielectric that arise in the presence of oxygen vacancies.

Flying Car Gets Road Approved In Czech Republic

The GyroDrive combines a gasoline-powered gyrocopter with an electric-powered three-wheel motorcycle, according to Nirvana Autogyro.

A Czech engineer has gotten roadworthy approvals for his gyrocopter prototype, the GyroDrive.

The GyroDrive, developed by Nirvana Autogyro owner Pavel Březina, uses electric motors for ground propulsion. Březina has successfully flown and driven the prototype, which, unlike all the other flying car schemes, Březina has actually gotten a road certificate in the Czech Republic.

Aside from Březina, PAL-V Liberty has been working on a road-able gyrocopter since 2001. The group has a working prototype since 2012. Since it is a 3-wheeled vehicle, it only has to pass motorcycle safety and pollution regulations. There is no crash-testing, which would require a structure with much more weight along with air bags and other design hurdles.

Like a lot of great engineers, they may be reaching for a bridge too far. It’s not only a trike, but a tilting trike. Rather than just lash the rotors like Březina does, it electrically lowers the whole tower and then the rotors can fold back in a method they do not disclose.

World Economic Round Up

Hungary's central bank has kept interest rates on hold as expected as markets focused on a possible further squeeze on short-term deposits to keep downward pressure on borrowing costs. U.S. employers are churning out jobs unabated as the economic expansion enters its ninth year, but the inability to generate more robust wage growth represents a missing piece in a largely complete labour recovery.

The latest economic news by country to include USA, Europe, UK, Japan, China, Asia Pacific and India can be found each month in our [Semiconductor Monthly Report](#).

Industry Events 2017

Future Horizons Events

- [Silicon Chip Industry Training Seminar](#) – London – 13th November 2017
- [Industry Forecast Briefing](#), London – 19th September 2017

To book your place on any of our events please contact us on:

Telephone: +44 1732 740440

Email: mail@futurehorizons.com

[Download Future Horizons Full Events Calendar Here](#)

Industry Events

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MARK YOUR CALENDER FOR THE NEXT

INDUSTRY FORECAST BRIEFING
TUESDAY 19th September 2017

AND

SILICON CHIP INDUSTRY WORKSHOP
MONDAY 19th November 2017

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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